

Application No. 10/722,814
Amendment dated February 17, 2006
After Final Office Action of December 21, 2005

Docket No.: 29936/39765

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of forming a gate electrode in a semiconductor, comprising:

sequentially forming a polysilicon film and a tungsten silicide film [sequentially] on a semiconductor substrate overlapping the polysilicon film, forming the tungsten silicide film by reacting SiH₄ or SiH₂Cl₂ with WF₆ at a stoichiometric ratio of (SiH₄ or SiH₂Cl₂): WF₆ of 2.0 - 2.8;

performing an annealing process to crystallize the tungsten silicide film; and

forming a gate electrode by performing a single etching process on the tungsten silicide film and the polysilicon film performing an etching process to etch the tungsten silicide film and the polysilicon film under the tungsten silicide film using the same etching gas, thereby forming a gate electrode comprising the tungsten silicide film and the polysilicon film.

2. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 1, wherein the annealing process is one of an rapid thermal process (RTP) annealing process and a furnace annealing process for crystallizing an amorphous tungsten suicide film to form a crystalline metal silicide film.

3. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 2, comprising performing the RTP annealing process at a temperature ranging from about 900°C to about 1000°C for a time period ranging from about 10 seconds to about 30 seconds in an ambient atmosphere of N₂ or NH₃ gas, and performing the furnace annealing process at a temperature ranging from about 850°C to about 1000°C for a time period ranging from about 5 minutes to about 30 minutes in an ambient of N₂ or NH₃ gas.

4. (Canceled)

5. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 1, comprising performing the etching process under a process condition for etching the polysilicon film.

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6. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 5, wherein the etching process is a dry etching process, and comprising performing the etching process in an inductively coupled plasma chamber into which a mixture gas of Cl₂ gas and O₂ gas is introduced.

7. (Previously Presented) The method of forming a gate electrode in a semiconductor according to claim 1, wherein the etching process is a dry etching process, and comprising performing the etching process in an inductively coupled plasma chamber into which a mixture gas of Cl₂ gas and O₂ gas is introduced.

8. (Original) The method of forming a gate electrode in a semiconductor according to claim 1, where in the annealing process results in the etch rate of the crystallized metal silicide film being similar to that of the polysilicon film.